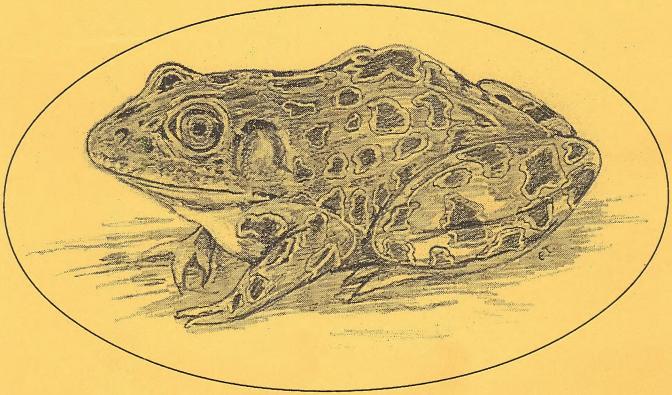

A SURVEY FOR NORTHERN LEOPARD FROGS (*RANA PIPIENS*) IN THE SNAKE RIVER RESOURCE AREA: 1997

by
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A Survey for Northern Leopard Frogs (*Rana pipiens*) in the Snake River Resource Area: 1997

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INTRODUCTION

In recent years, concern has grown over the status and trend of the northern leopard frog (*Rana pipiens*) in the United States and Canada. Populations in eastern North America apparently began declining in the 1960's, reaching Manitoba and Alberta, Canada in the mid- and late 1970's respectively (W. Roberts, Univ. of Alberta Museum of Zoology in Stebbins and Cohen 1995).

In the Pacific Northwest, declines or disappearances of leopard frogs have been noted in several states. In Washington, the northern leopard frog was historically well-represented in several areas in the eastern portion of the state; currently it is among the most rare of the state's amphibians (McAllister 1997). Anecdotal information for Oregon suggests that the species has not been observed in several historical sites in over twenty years (Hayes 1997). In western Montana, the species historically was common in intermountain valleys, but has now nearly disappeared; a decline in eastern and central Montana is suspected, but the status is poorly understood (Reichel et al. 1997).

In Idaho, a statewide survey of natural resource personnel, academicians and others indicated at least anecdotal evidence for declines in northern leopard frogs (Groves and Peterson 1992). Peterson (1997) reported that the distribution and relative abundance of northern leopard frogs appears to have decreased considerably in southern Idaho, as well as in the Greater Yellowstone Ecosystem. Presently, the species is designated as Sensitive by the U.S. Bureau of Land Management, and as a Priority Species of Special Concern by the Idaho Dept. of Fish and Game. While interest in amphibian ecology, distribution and trends in Idaho has increased dramatically in recent years, survey efforts have focused largely on the Columbia spotted frog (*Rana luteiventris*) (e.g. Munger et al. 1994; Munger et al. 1996; Munger et al. 1997). In southcentral Idaho, historical accounts (Appendix A, Table 1) note the presence of northern leopard frogs in several localities along the Snake River from Blue Lakes Springs near Twin Falls upstream to American Falls, and possibly at Lake Channel; in the Twin Falls city limits; at Deep Creek, east of Rogerson; and along Cassia Creek and the Raft River. During a biological survey of Salmon Falls Canyon in western Twin Falls County, Trost (1975) reported that the species was "observed all along the creek from the dam to Balanced Rock".

In 1994-95, an amphibian survey in portions of the Jarbidge and Snake River Resource Areas, including upper Salmon Falls Creek, yielded no leopard frogs (McDonald 1996). In 1995, the species was noted in several localities near the eastern half of Lake Walcott, by S. Bouffard, U.S. Fish and Wildlife Service (Table 1). The only other recent observation of leopard frogs in the Snake River Resource Area, prior to this study, was noted by J. Tharp, Ecologist, along the Raft River narrows in southern Cassia County in September 1992.

In the Malad Resource Area, leopard frogs were documented at St. John's Reservoir by J. Hawk in 1992 and at Hawkins Reservoir by J. Kumm and C. Trost in 1994 (Table 1).

The recent rarity of northern leopard frog sightings in the Snake River Resource Area is notable. Between 1991 and 1997, Burley Field Office resource staff and contracted field personnel, requested to document incidental amphibian sightings during the course of other investigations, observed no leopard frogs despite involvement in over 130 miles of riparian inventories and field verifications of hundreds of springs, wet meadows and reservoirs, exclusive of the Snake River. Some of these sites, such as those characterized by high gradient, fast-flowing streams or ephemerally flooded shallow livestock reservoirs were inherently unsuitable for leopard frogs, but several substantial riparian systems, including Salmon Falls Creek, Cassia Creek, and the Raft River provided habitat historically (Table 1). Additionally, no leopard frogs were observed along Shoshone Creek or Big Creek in southern Twin Falls County, despite the presence of potential habitat and despite being tributaries of the Salmon Falls Creek watershed.

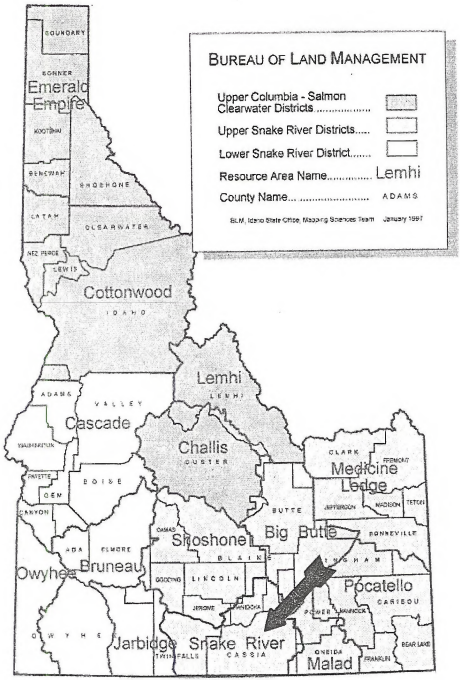
In light of the above, and considering the data gaps and uncertainty in our understanding of the northern leopard frog's current distribution and status in southcentral Idaho, it was prudent to begin focused surveys in 1997 to document localities of existing populations. With a better understanding of the species' distribution, planning for long term monitoring and/or conservation actions can be addressed.

STUDY AREA

The majority of the study area encompassed public (BLM), U.S. Bureau of Reclamation (BOR), U.S. Forest Service (USFS), Minidoka National Wildlife Refuge (USFWS), and selected private lands within the perimeter of the U.S. Bureau of Land Management's Snake River Resource Area in southcentral Idaho (Figure 1). Visits were also made to Wilson Reservoir, on the Shoshone Resource Area, and at Daniels and Hawkins Reservoirs within the Malad Resource Area. Since a primary objective of the study was to refine our knowledge of the current distribution of leopard frogs in southcentral Idaho, inclusion of sites owned and administered by a variety of entities was necessary in order to sample as broad a spectrum of historic and potential habitats as possible.

Idaho counties represented in the survey included portions of Bannock, Blaine, Cassia, Jerome, Minidoka, Oneida, Power, and Twin Falls. While surveys focused on the northern leopard frog, incidental observations of other amphibian and reptile species were also documented. Specific survey sites were subjectively

Figure 1. Study area location. Snake River Resource Area 1997 northern leopard frog survey.



selected primarily on the basis of the historic presence or probable potential for leopard frogs, convenience/accessibility, and on the need for baseline surveys.

Elevations of survey sites ranged from 4015 ft (1224 m) to an extreme of 7200 ft (2195 m), however the majority of effort was expended at the lower elevations at various reservoirs, wetlands and riparian systems associated with the Snake River Plain.

METHODS

The primary objective of this study was to survey, during the spring and summer of 1997, as many known wetland or riparian sites as possible, to document the presence or absence of northern leopard frogs. It was recognized that while the presence of an amphibian species at a particular site may be easily detected, the interpretation of absence poses difficulties, in that absence may merely reflect detection biases (some species are easier to detect than others); surveyor experience; temporary, localized extinctions; or low population numbers due to marginal habitat and/or lack of or delayed breeding in a given year (Fellers 1997). Historic and recent leopard frog observations were provided courtesy Dr. C. Peterson, Intermountain Herpetological Database, Biology Department, Idaho State University, Pocatello. Several long-term residents of Burley and Rupert, Idaho were also questioned during the course of the study regarding their knowledge of historic or current leopard frog locations and perceptions of habitat or population trends and threats.

Surveys were conducted using the Visual Encounter Survey method (M. Crump and N. Scott, Jr. in Heyer et al. 1994). Observation data were recorded on an Amphibian and Reptile Observation Form (C. Peterson, Intermountain Herpetological Database, Idaho State University, Pocatello); site and water chemistry data were recorded on an Amphibian Survey Data Sheet (U.S. Fish and Wildlife Service, Fort Collins, CO. Version 2/7/92). In general, personnel slowly walked and/or waded survey sites, systematically working all or a portion of the area, visually scanning for amphibians. Survey effort was timed, to allow conversion to man-minutes per frog, to permit comparison of results with subsequent surveys. Specific survey areas were also noted and sketched on the data sheet.

Data recorded included date, time, observer, species, developmental stage (adult, juvenile, tadpole etc.), numbers observed, behavioral and descriptive notes, locality, legal description, county, land status, elevation, predominant vegetation, substrate, air temperature, cloud cover, and wind speed. Photo vouchers were made of some specimens.

Water samples were taken at survey sites in undisturbed areas approximately 3.28 ft (1.0 m) from shore, or at specific amphibian sites (flooded shallows etc.) if disjunct from a discrete water feature. Water parameters estimated included temperature, pH, color, turbidity, and electrical conductivity. Conductivity was measured using a Model 532 M1 Electrical Conductivity Meter, by Myron L Company; pH was estimated to the nearest 0.1 unit using a pHTestr 2 by Oakton [1].

Based on a widely-observed empirical relationship characteristic of a broad range of fresh waters, an approximate range for the concentration of dissolved solids in mg/L was estimated as 0.6 to 0.7 the electrical conductivity of the sample (D. Kotansky, Hydrologist, BLM, Idaho Falls, pers. comm.). For example, a water sample with an electrical conductivity reading of 100 umhos/cm was assumed to reflect a dissolved solids concentration of 60-70 mg/L.

Survey sites were plotted on USGS 1:24,000 topographic maps. Observation forms and applicable photo vouchers were submitted to Dr. C. Peterson, Intermountain Herpetological Database, Biology Department, Idaho State University, Pocatello. Photographs were also taken of each site, for future reference.

In May 1997, we also solicited assistance from the community through an article in a local newspaper describing the study, and concerns over the status and trend of northern leopard frog populations. The article, featured in the weekly "Outdoors" section of the paper, was accompanied by a large close-up photo of a northern leopard frog, and resulted in several tips of potential leopard frog locations. Four long-time residents also provided insightful observations of apparent declines or disappearances of frogs from irrigation canals since the 1960's.

RESULTS AND DISCUSSION

Between April 22 and September 2, 1997, we visited 30 sites (Appendix A, Table 2). See also Appendix B, Maps 1-20. Two or more visits were made to several locations, including McClenden Springs Pond, Raft River Exclosure, Gifford Spring ponds, Murtaugh Lake, Camp Holly Marsh, and Trapper Creek.

We documented five amphibian species, including the northern leopard frog (*Rana pipiens*), Pacific chorus frog (*Pseudacris regilla*), boreal chorus frog (*Pseudacris triseriata maculata*),

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[1] Product names are mentioned for the reader's convenience only and do not imply endorsement by the author, the Bureau of Land Management, or the U.S. Government.

Great Basin spadefoot "toad" (*Scaphiopus intermontanus*) and a neotenic tiger salamander (*Ambystoma tigrinum*). Incidental sightings were also made of western skinks (*Eumeces skiltonianus*) and wandering (western terrestrial) garter snakes (*Thamnophis elegans*). A single tadpole, tentatively identified as a western toad (*Bufo boreas*), was briefly observed at Wilson Reservoir; however further surveys are needed to confirm the presence of this species.

Mr. O. Murphy, Burley, reported observing what he believed to be a northern leopard frog near the confluence of Trapper and Squaw Creeks on the Sawtooth National Forest in southwestern Cassia County in 1996. We were unable to confirm the species' presence during the two visits made to the area during this study (Table 2 Items 29,33; Map 14). Follow-up surveys are recommended.

Northern Leopard Frog:
Locality Records: Within the perimeter of the Snake River Resource Area, we documented adult northern leopard frogs at the western end of Murtaugh Lake in Twin Falls County; eight sites along Lake Walcott and the Snake River in Cassia and Blaine Counties; and at a wetland 0.6 miles east of Gifford Spring near the Snake River in Power County (Table 2).

Based on Intermountain Herpetological Database records as of 12 September 1997, northern leopard frogs had not been previously reported at Murtaugh Lake (Table 2, Items 9,14; Map 6) or at the marsh east of Gifford Springs (Table 2, Item 34; Map 4). In 1995, S. Bouffard (USFWS) documented northern leopard frogs at six locations along the shore of the Snake River and Lake Walcott on the Minidoka National Wildlife Refuge (Table 1). In the current study, we re-surveyed two of these sites (MND-16 and MND-25) and also encountered adult leopard frogs (Table 2, Item 26; Map 13 and Item 35; Map 11). We also documented the species at six new sites along Lake Walcott and the Snake River. These included two small bays along the south shore of Lake Walcott/Snake River (Table 2, Items 23,24,25; Map 11); Raft River mouth (Item 31, Map 16);"Six Mile Hole" (Item 37; Map 17); Blue Lake (Item 38 Map 17); and a small bay along the northeast shore of Lake Walcott (Table 2 Item 36; Map 12).

In late July 1997, a fisherman anonymously reported observing numerous leopard frogs in sloughs along the Snake River west of the Burley-Paul Bridge, but we were unable to obtain landowner permission to formally confirm the sighting.

In the Malad Resource Area, we documented adult northern leopard frogs at Daniels Reservoir (Oneida County) and juveniles at Hawkins Reservoir (Bannock County). See Table 2 Items 40-43 and Maps 19-20. Sightings of northern leopard frogs at Daniels Reservoir have not been previously recorded in the Intermountain

Herpetological Database. In 1994, J. Kumm and C. Trost encountered the species in the backwaters of Hawkins Reservoir (Table 1).

Land Status: Of the ten leopard frog sites within the perimeter of the Snake River Resource Area, six lie within the administrative jurisdiction of the U.S. Fish and Wildlife Service's Minidoka National Wildlife Refuge along Lake Walcott and the Snake River; three lie within BLM's Snake River Resource Area lands or straddle the Snake River Resource Area/Minidoka National Wildlife Refuge boundary; the Murtaugh Lake locality is privately owned (Table 3).

In the Malad Resource Area, lands surrounding Daniels Reservoir, and harboring leopard frogs, are privately owned. Leopard frog sites at Hawkins Reservoir occurred on both BLM and private lands (Table 3).

Habitat: Bulrushes (*Scirpus acutus*) and cattails (*Typha* sp.) were the predominant vegetation species at 5 of the 14 discrete leopard frog sites (Table 3). Near the Raft River mouth, leopard frogs were easily observed as they rested atop floating mats of dead bulrushes. Other leopard frog sites were characterized by dense stands of various rushes (*Juncus* spp.), spikerushes (*Eleocharis* spp.) and/or sedges (*Carex* spp.). The backwaters of Hawkins Reservoir (Item 43; Map 20) were dominated by cocklebur (*Xanthium* sp.) and *Potentilla* sp. Use of cocklebur-dominated riparian sites by leopard frogs has also been reported in Washington state (Leonard et al. 1993).

National Wetland Inventory (NWI) maps describe seven of the 14 leopard frog sites as Palustrine Emergent Seasonally Flooded Wetlands (Table 4). Other sites included Palustrine Unconsolidated Bottom Permanently Flooded Wetlands; and Lacustrine Littoral Unconsolidated Shore Seasonally Flooded Wetlands. Two sites at Hawkins Reservoir were not classified. Most leopard frog sites were associated with large, relatively deep bodies of water including Murtaugh Lake, bays or marshes along the Snake River and Lake Walcott; and Daniels and Hawkins Reservoirs.

Water Chemistry: The primary intent of this survey was to document leopard frog localities, and secondarily, to describe generic habitat characteristics and estimate selected water chemistry attributes to facilitate long-term monitoring of specific sites (Table 5).

Mean water temperature at leopard frog sites was 79 F (range 62-79); and pH averaged 8.7 (range 7.5-9.5). Estimates of Total Dissolved Solids, estimated as a function of electrical conductivity, varied considerably. Values ranged from a low of 126-147 mg/L at a small bay on the north shore of Lake Walcott

(Table 5 Item 36; Map 12) to 1620-1890 mg/L at a shallow alkali pond east of Gifford Spring (Table 5 Item 34; Map 4). Midpoints for these estimates averaged 333.2 mg/L (SD=432.3) across the 13 discrete sites where water samples were taken.

Weather: Survey efforts extended across several months (April to early September, thus air temperatures varied considerably, averaging 76 F at leopard frog sites (range 66-86)(Table 5).

Survey Effort: Daniels and Hawkins reservoirs yielded the greatest number of individual leopard frog observations in the shortest timeframe relative to other sites surveyed in 1997 (Table 6). In August, we observed 26 leopard frogs in 50 total man-minutes of survey effort at Daniels Reservoir (1.9 man-minutes/frog) and 21 juvenile leopard frogs in 50 man-minutes at Hawkins Reservoir (2.4 man-minutes/frog). In contrast, survey effort/frog was considerably greater during visits to other sites earlier in the season. For example, at Murtaugh Lake, we observed 2 adult leopard frogs in 246 man-minutes on 21 May 1997 (123 man-minutes/frog). At the mouth of the Raft River, we documented 2 adults in 224 man-minutes, or 112 man-minutes per frog. As surveys were conducted across several months, direct comparison of search effort between sites must be interpreted with caution, and may not reflect true population differences.

Six separate diurnal visits were made throughout the 1997 season to the Snake River Resource Area's Raft River riparian exclosure on the upper Raft River(Map 2). Specifically, the site was surveyed on April 22 and 30; May 20; June 4 and 26; and September 2). Despite a total of 521 man-minutes of survey effort along the river and adjacent wetlands, no amphibians were noted, although J. Tharp documented 12 leopard frogs at the site in September 1992.

Historical Notes: Several long-time residents of Cassia and Minidoka Counties, Idaho provided information on apparent declines or disappearances of frogs over the past several decades. Mr. O. Murphy, Burley, recalled that "frogs" were abundant in a local agricultural drain ditch seventy years ago. As a youth in the late 1960's, D. Thompson, Heyburn, commonly observed and captured leopard frogs on mats of aquatic moss associated with local irrigation canals and ditches. Mr. P. Bradfield, Rupert, also recalled that frogs were once abundant in such systems, and surmised that they disappeared when chemicals were introduced to control aquatic vegetation. This conclusion is corroborated by M. Vaughn, Rupert, who recalled that prior to the early 1960's, when control of aquatic vegetation was accomplished by mechanical means, leopard frogs were commonly encountered in ditches and canals. In the mid to late 1960's, however, he recalls observing dead or dying leopard frogs shortly after the application of chemicals, including xylene and Acrolein.

Currently, aquatic vegetation is still routinely controlled in irrigation ditch systems with the above chemicals, in addition to copper sulfate (M. Etcheverry,Idaho Div. Env. Qual., pers. comm.). All are known to be toxic to aquatic organisms including frogs, and are applied only to closed systems. Alternative chemicals are being considered; reversion to mechanical control methods, which stir sediments and other aquatic debris, would not be compatible with modern sprinkler irrigation systems (R. Bingham, Burley Irrigation Dist., pers. comm.).

Pacific Chorus Frog:
Adult Pacific chorus frogs were documented at a small un-named spring and at two neighboring spring-fed ponds in southern Twin Falls County (Table 2, Items 7 and 17; Map 5) and at Deadeye Reservoir in western Cassia County (Table 2, Item 20; Map 8). Plant species were generally dominated by *Juncus* spp., although watercress (*Nasturtium officinale*) predominated at one site (Table 3 Item 17). The three sites were characterized as Palustrine-Emergent wetlands (Table 4). Water temperature averaged 65 F (Range 56-75); Water pH averaged 8.1 (range 7.9-8.4) (Table 5).

Boreal Chorus Frog:
We documented adult boreal chorus frogs at several sites across the Snake River Resource Area including Murtaugh Lake in Twin Falls County (Table 2 Items 10,15; Map 6); Peterson's Island, Cassia County (Table 2 Item 22; Map 10); and at three localities in Minidoka County including a sub-irrigated wetland adjacent to the Main Northside Canal (Table 2 Item 3; Map 3); Camp Holly Marsh (Table 2 Items 11,19,28; Map 7), and at King Spill (Table 2 Item 18; Map 7). Four of the five sites were dominated by cattails (Table 3). Four of five sites were classified as Palustrine-Emergent, Seasonally or Temporarily flooded wetlands (Table 4). Water temperature at three sites for which data were collected averaged 68 F (range 62-74). Water pH averaged 8.9 (range 8.7-9.0) (Table 5).

Great Basin Spadefoot Toad:
We documented Great Basin spadefoot toad eggs and tadpoles at lower McClenden Springs pond in Cassia County (Table 2 Items 1 and 13 respectively; Map 1). This site is a spring fed, man-made pond. Vegetation was dominated by rushes or rush-like emergent vegetation (Table 3). The pond is classified as a Palustrine-Unconsolidated Bottom Semipermanently Flooded, Excavated wetland (Table 4). During the two visits to the site, water temperature ranged from 59-64 F; pH, measured during the first visit, was 8.3 (Table 5).

Western Toad:
During the single visit to Wilson Reservoir in Jerome County, the only amphibian noted during 45 man-minutes of search effort was a

single black tadpole (Table 2 Item 39; Map 18). The tadpole was observed only briefly, before it escaped into flooded woody vegetation. Based on available references (Nussbaum et al. 1983; Peterson and Fabian 1997), the tadpole tentatively appeared to be that of a western toad. Additional follow-up surveys at Wilson Reservoir are warranted to verify the species' presence.

Tiger Salamander:
A single dead 10.5 inch long neotenic tiger salamander was found floating in approximately 1.0 ft of water along the eastern shore of North Cottonwood Reservoir in Twin Falls County (Table 2 Item 30; Map 15). The species has not been previously documented at this site, based on Intermountain Herpetological Database records. In the Pacific Northwest, tiger salamanders have been used as fish bait (Leonard et al. 1993), thus it is conceivable that this individual was introduced. Further surveys are warranted to confirm the species' presence. At the North Cottonwood locality, plant communities adjacent to shore were relatively diverse, including a small stand of cottonwoods (*Populus* sp.), rushes/sedges, cattails, and sagebrush-grass. Associated wetlands were classified as Palustrine Emergent, Seasonally Flooded(Table 4). water temperature was 72 F; pH 9.8 (Table 5).

Incidental Reptile Observations:
We documented two reptile species of interest during this survey. Wandering garter snakes (=western terrestrial) were noted at an abandoned beaver pond at the upper end of the North Fork of Cold Creek in Cassia County (Table 2 Item 21; Map 9).

Western skinks were noted approximately 0.6 miles east of Gifford Springs in Power County (Table 2 Item 5; Map 4) and 0.5 miles NNE of Rock Cabin Spring in southern Twin Falls County (Table 2 Item 16; Map 5).

CONCLUSIONS AND RECOMMENDATIONS

1. Northern leopard frogs were documented at Murtaugh Lake, Twin Falls County; eight sites along Lake Walcott in Cassia and Blaine Counties; at a marsh east of Gifford Springs in Power County; Daniels Reservoir in Oneida County; and at Hawkins Reservoir, Bannock County. Lake Walcott harbors a number of small bays and emergent wetlands suitable for leopard frogs. Leopard frogs appeared to be relatively common at Daniels and Hawkins Reservoirs. Both Daniels and Hawkins Reservoirs are popular with fishermen; the former is managed by the Idaho Department of Fish and Game as a trophy trout fishery.

2. Leopard frogs were not documented at the Snake River Resource Area's upper Raft River riparian exclosure site in southern Cassia County despite multiple visits, and despite their presence in 1992.

3. Long term leopard frog monitoring surveys should be established at one or more of the above sites beginning in 1998.

4. Additional leopard frog surveys along Lake Walcott and the Snake River, in cooperation with the Minidoka National Wildlife Refuge and/or interested private landowners, would further facilitate assessment of the species' current distribution in southcentral Idaho. Identification of bays and emergent wetlands, via National Wetland Inventory maps or aerial photographs, could provide a relatively complete inventory of suitable search areas.

5. Surveys of historic leopard frog localities should continue, encompassing upper and lower Salmon Falls Canyon, the Snake River Canyon and Blue Lakes area near Twin Falls, and Deep Creek east of Rogerson (Twin Falls County); Cassia Creek and the Raft River (Cassia County); St. John's Reservoir (Oneida County); and Lake Channel (Power County).

6. Given that the preponderance of leopard frog sightings in this study occurred at various southern Idaho reservoirs, surveys of Stone, Devil Creek and Deep Creek Reservoirs in Oneida County, should also be considered.

7. Additional baseline amphibian surveys are warranted at Wilson Reservoir, Jerome County and North Cottonwood Reservoir, Twin Falls County, to establish the presence of western toads and tiger salamanders, respectively.

8. Based on conversations with several long-time residents, chemicals including xylene and acrolein, used routinely to control aquatic vegetation in irrigation waterways, have allegedly resulted in local frog mortalities in the past. Current use of these chemicals, as well as copper sulfate, are likely a primary factor in limiting the distribution of frogs in these water systems today.

9. The inclusion of privately-owned wetlands associated with southern Idaho reservoirs and the Snake River corridor will likely be essential to the success of conservation planning for leopard frogs in southcentral Idaho. However, in attempting to secure permission to access certain lands during the course of this study, it became apparent that some landowners are very reluctant to permit surveys for Sensitive species, due to a perceived fear of unknown controls or constraints that could arise should Sensitive species be detected and subsequently listed as Threatened or Endangered. There is thus a continuing need for public outreach, cooperative surveys and collaborative planning to ensure the viability of these important wetland systems is maintained in the long term.

LITERATURE CITED

Fellers, G.M. 1997. Design of amphibian surveys. Pages 23-34 in Olson, D.H., W.P. Leonard, and R.B. Bury, eds. Sampling amphibians in lentic habitats: Methods and approaches for the Pacific Northwest. Soc. for Northwestern Vertebrate Biology. Northwest Fauna No. 4. Olympia, WA. 134 pp.

Groves, C.R. and C. Peterson. 1992. Distribution and population trends of Idaho amphibians as determined by mail questionnaire. Idaho Department of Fish and Game. Report. 17 pp.

Hayes, M. 1997. The status of the northern leopard frog (*Rana pipiens*), the western toad (*Bufo boreas*) and the common garter snake (*Thamnophis sirtalis*) in Oregon. Pages 46-47 in Koch, E.D., G. Wood, C.R. Peterson and P.S. Corn. 1997. A summary of the Conference on Declining and Sensitive Amphibians in the Rocky Mountains and Pacific Northwest. Nov. 7-8, 1996. Idaho Herp. Soc. and U.S. Fish and Wildl. Serv., Snake River Basin Office Report, Boise, Idaho. 96 pp.

Heyer, W.R., M.A. Donnelly, R.W. McDiarmid, L.C. Hayek, and M.S. Foster. 1994. Measuring and monitoring biological diversity: Standard methods for amphibians. Smithsonian Institution Press. Washington. 364 pp.

Leonard, W.P., H.A. Brown, L.L.C. Jones, K.R. McAllister, and R.M. Storm. 1993. Amphibians of Washington and Oregon. Seattle Audubon Soc. Seattle, Washington. 168 pp.

McAllister, K.R. 1997. The status of the northern leopard frog (*Rana pipiens*) and the western toad (*Bufo boreas*) in Washington State. pages 45-46 in Koch, E.D., G. Wood, C.R. Peterson and P.S. Corn. 1997. A summary of the Conference on Declining and Sensitive Amphibians in the Rocky Mountains and Pacific Northwest. Nov. 7-8, 1996. Idaho Herp. Soc. and U.S. Fish and Wildl. Serv., Snake River Basin Office Report, Boise, Idaho. 96 pp.

McDonald, M. 1996. Amphibian inventory of the Jarbidge and Snake River Resource Areas. U.S. Bureau of Land Management Idaho Technical Bulletin 96-13. 23 pp.

Munger, J.C., L. Heberger, D. Logan, W. Peterson, L. Mealy, and M. Caughlin. 1994. A survey of herpetofauna of the Bruneau Resource Area, Boise District, with focus on the spotted frog (*Rana pretiosa*). U.S. Bureau of Land Management Idaho Technical Bulletin 94-7. 63 pp.

Munger, J.C. M. Gerber, M.A. Carroll, K. Madrid, and C. Peterson. 1996. Status and habitat associations of the spotted frog (Rana pretiosa) in Southwestern Idaho. U.S. Bureau of Land Management Idaho Technical Bulletin 96-1. 110 pp.

Munger, J.C., A. Ames, and B. Barnett. 1997. 1996 Survey for Columbia spotted frogs in the Owyhee Mountains of Southwestern Idaho. U.S. Bureau of Land Management Idaho Technical Bulletin 97-13. 28 pp.

Nussbaum, R.A., E.D. Brodie, and R.M Storm. 1983. Amphibians and Reptiles of the Pacific Northwest. University of Idaho Press, Moscow.

Peterson, C.R. 1997. The status of western toads (*Bufo boreas*), northern leopard frog (*Rana pipiens*), and common garter snakes(*Thamnophis sirtalis*) in Idaho and the Greater Yellowstone Ecosystem. Pages 50-52 in Koch, E.D., G. Wood, C.R. Peterson and P.S. Corn. 1997. A summary of the Conference on Declining and Sensitive Amphibians in the Rocky Mountains and Pacific Northwest. Nov. 7-8, 1996. Idaho Herp. Soc. and U.S. Fish and Wildl. Serv., Snake River Basin Office Report, Boise, Idaho. 96 pp.

Peterson, C.R. and H.J. Fabian. 1997. Photographic Identification Cards for Idaho Amphibians, Herpetology Laboratory, Dept. Biol. Sci. & Idaho Museum of Nat. Hist., Idaho State University, Pocatello.

Reichel, J.D., J.K. Werner, D.P. Hendricks, and T. Plummer. 1997. Status of northern leopard frogs and western toads in Montana. Pages 49-50 in Koch, E.D., G. Wood, C.R. Peterson and P.S. Corn. 1997. A summary of the Conference on Declining and Sensitive Amphibians in the Rocky Mountains and Pacific Northwest. Nov. 7-8, 1996. Idaho Herp. Soc. and U.S. Fish and Wildl. Serv., Snake River Basin Office Report, Boise, Idaho. 96 pp.

Stebbins, R.C., and N.W. Cohen. 1995. A natural history of amphibians. Princeton Univ. Press. 316 pp.

Trost, C.H. 1975. A biological survey of Salmon Falls Canyon. Report to Burley District, U.S. Bureau of Land Management. 52 pp.

APPENDIX A

TABLES 1-6

Table 1. Historic and recent locality records for northern leopard frogs in the vicinity of the Snake River Resource Area, southcentral Idaho. Source: Intermountain Herpetological Database, Idaho State University, Pocatello, as of Sept. 12, 1997. Tentative or uncertain legal descriptions or other information are noted with a "?".

OBSERVATION NUMBER AND SOURCE	DATE MMDDYY	LEGAL DESCRIPTION	LOCALITY	COUNTY	OBSERVER/COMMENTS
MND-15 (IHOD)	06/15/1995	T9S, R27E Sec 16:NW¼ of SW¼	Near Smith Sprgs. MNWR	Blaine	S.H. Bouffard; 1 adult
MND-16 (IHOD)	06/15/1995	T9S, R27E Sec 22: SW¼ of SE¼	Minidoka NWR	Cassia	S.H. Bouffard; 12 adults
MND-17 (IHOD)	06/14/1995	T9s, R27E Sec 17: NE¼ of SW¼	BLM near Minidoka NWR	Cassia	S.H. Bouffard; 1 adult
MND-18 (IHOD)	06/14/1995	T9S, R27E Sec 21: NE¼	Minidoka NWR	Cassia	S.H. Bouffard; 1 adult
MND-24 (IHOD)	09/14/1995	T8S, R26E Sec 36: SE¼ of SE¼	State lands	Blaine	S.H. Bouffard; 1 adult
MND-25 (IHOD)	06/30/1995	T9S, R27E Sec 9: SW¼ of NW¼	BLM near MNWR	Blaine	S.H. Bouffard; 1 adult
Trost1 (IHOD)	08/1994	T10S, R35E Sec 35: NE¼NW¼	Hawkins Reservoir	Bannock	J. Kumm/C. Trost
None (IHOD)	05/02/1992	T14S, R36E Sec 7: NE¼	St. John's Reservoir	Oneida	J. Hawk; NW. of Malad, ID
3260 (UIM)	07/28/1958	Uncertain	"4 miles south of Raft River"	Cassia?	P. Dumas; adult
3261 (UIM)	07/22/1958	Uncertain	"2 miles of Malta"	Cassia	P. Dumas; adult
3268 (UIM)	07/22/1958	T13S, R26E Sec 15?	"2 mi. SW of Malta"	Cassia	P. Dumas; subadult
3270 (UIM)	07/22/1958	T15S, R26E Sec 15?	"2 mi. SW of Malta"	Cassia	P. Dumas; subadult
3499 (UIM)	06/14/1954	T15S, R26E Sec 24?	"1 mile S. of Malta"	Cassia	P. Dumas; adult
3522 (UIM)	06/16/1955	T13S, R26E Sec 19?	"1 mile W of Conant at Elba Road"	Cassia	P. Dumas; adult
4948 (MVZ)	06/17/1934	T13S, R25E Sec 32?	"Elba"	Cassia	W.B. Davis
4866 (CPS)	04/06/1939	T10S, R18E Sec 12	"Hanson's (Hansen) Bridge, Snake River"	Jerome	"WCB"
4868 (CPS)	04/06/1939	Uncertain	"Hanson's (Hansen) Bridge Snake River 5 mi NE"	Jerome	"MJ"; "Rana pipiens eggs?"
324 (CAS)	08/21/1894	T9S, R17E Sec28?	"Blue Lakes Springs"	Jerome	Gilbert et al.

Table 1. Historic and recent locality records for northern leopard frogs in the vicinity of the Snake River Resource Area, southcentral Idaho. Source: Intermountain Herpetological Database, Idaho State University, Pocatello, as of Sept. 12, 1997. Tentative or uncertain legal descriptions or other information are noted with a "?".

OBSERVATION NUMBER AND SOURCE	DATE MMDDYY	LEGAL DESCRIPTION	LOCALITY	COUNTY	OBSERVER/COMMENTS
320 (CAS)	08/25/1894	Uncertain	"Snake River American Falls"	Power?	Gilbert et al.
14 (AMNH)	No date	Uncertain	"2 miles W of Massacre Rock"	Power	No name
2158 (IMNH)	09/12/1962	Uncertain	"Channel Lake" Possibly Lake Channel?	Power?	No name
2159 (IMNH)	09/12/1962	Uncertain	"Channel Lake" Possibly Lake Channel?	Power?	No name
2160 (IMNH)	09/12/1962	Uncertain	"Channel Lake" Possibly Lake Channel?	Power?	No name
2204 (IMNH)	07/02/1959	Uncertain	"ca. 2 miles NW of American Falls"	Power	No name
2439 (IMNH)	06/14/1975	Uncertain. [But Trost et al. (1975)reported leopard frogs were observed "all along the creek from the dam to Balanced Rock"]	"Salmon Falls Creek above Balanced Rock St. Park"	Twin Falls	No name
3468 (UIM)	06/13/1958	Uncertain	"0.5 miles E. of Twin Falls"	Twin Falls	Wilcox; adult
3469 (UIM)	06/20/1958	Uncertain	"Twin Falls City Limits"	Twin Falls	Gillenwater; adult
3751 (UIM)	08/10/1976	Uncertain	"Twin Falls"	Twin Falls	S. File; adult
6913 (CPS)	06/24/1941	Approximately T14S, R16E Sec 12	"3 mi. E and 1 mi. N. of Rogerson"	Twin Falls	F. Seabeck
110 (BSU)	10/05/1969	Uncertain	"8¼ miles S.SE. Twin Falls	Twin Falls	Holesinsky

Legend for observation sources, Intermountain Herpetological Database, Idaho State University, Pocatello:
UIM =Univ. Idaho, Moscow
MVZ =Museum of Vertebrate Zool., Univ. Calif, Berkeley
CPS =Univ. of Puget Sound Slater Museum of Nat. Hist.
CAS =California Academy of Sciences
AMNH =American Museum of Natural History
IMNH =Idaho Museum of Natural History
IHOD =Intermountain Herpetological Observation Database, ISU
BSU =Boise State Univ.

Table 2. Amphibian and incidental reptile locality records documented during the 1997 Snake River Resource Area northern leopard frog survey. Chronological.

ITEM/MAP	SPECIES/NO.	DATE MMDDYY	TIME	LOCATION	LOCALITY	COUNTY
1 (MAP 1)	Great Basin Spadefoot (6 egg masses)	04/22/97	1510	T12S R26E Sec 34 SE¼ of SE¼ of NW¼	McClenden Springs lower pond	Cassia
2 (MAP 2)	None seen	04/22/97	1045	T15S R26E Sec 32 SE¼SW¼ of SW¼	Raft River exclosure	Cassia
3 (MAP 3)	Boreal chorus frog (chorus)	04/27/97	1500	T9S R25E Sec 4 NE¼ of NW¼ of NW¼	Main Northside Canal	Minidoka
4 (MAP 2)	None seen	04/30/97	0925	T15S R26E Sec 32 SE¼SW¼ of SW¼	Raft River exclosure	Cassia
5 (MAP 4)	Great Basin Skink (juvenile)	05/02/97	1215	T9S R28E Sec 15 SE¼ of SW¼ of NW¼	0.6 mile E of Gifford Sprgs	Power
6 (MAP 4)	None seen	05/02/97	1028 1310	T9S R28E Sec 15 SESW¼ of NW¼; SWSE¼ of NW¼	Marsh and "Alkali Pond"	Power
7 (MAP 5)	Pacific Chorus Frog (13 adult)	05/10/97	1500	T16S R16E Sec 28 NW¼NE¼ of NE¼; SWNE¼ of NE¼	2 Ponds 0.7 miles SSW of Rock Cabin Sprgs	Twin Falls
8 (MAP 5)	None Seen	05/10/97	1625	T16S R16E Sec 21 SW¼ of SE¼ of NE¼	Rock Cabin Springs lower pond	Twin Falls
9 (MAP 6)	Northern Leopard Frog (1 adult)	05/10/97	1915	T11S R19E Sec 13 SW¼ of SE¼ of SE¼	Marsh at west end Murtaugh Lake	Twin Falls
10 (MAP 6)	Boreal Chorus Frogs (chorus)	05/10/97	1900	T11S R19E Sec 13 SE¼ of SE¼	West end Murtaugh Lake	Twin Falls
11 (MAP 7)	Boreal Chorus Frog (2 adults)	05/11/97	1905	T09S R24E Sec 6 SE¼ of SE¼ of SE¼	Camp Holly Marsh	Minidoka
12 (MAP 2)	None seen	05/20/97	1200	T15S R26E Sec 32 SW¼ SW¼;T16SR26E Sec 5 NW¼NW¼	Raft River exclosure	Cassia
13 (MAP 1)	Great Basin Spadefoot tadpoles	05/20/97	0930	T12S R26E Sec 34 SE¼ of SE¼ of NW¼	McClenden Springs lower pond	Cassia
14 (MAP 6)	Northern Leopard Frog (2)	05/21/97	1340	T11S R19E Sec 13 SW¼ of SE¼ of SE¼	Marsh at west end Murtaugh Lake	Twin Falls
15 (MAP 6)	Boreal Chorus Frog (1 adult)	05/21/97	1440	T11S R19E Sec 13 NW¼ of SE¼ of SE¼	West end Murtaugh Lake	Twin Falls
16 (MAP 5)	Western Skink (1 adult)	05/22/97	1515	T16S R16E Sec 22 NW¼ of NW¼ of NW¼	0.5 miles NNE of Rock Cabin Spring	Twin Falls
17 (MAP 5)	Pacific Chorus Frog (1 adult)	05/22/97	1230	T16S R16E Sec 28 NE¼ of NE¼ of NE¼	BLM spring No. 4702480054	Twin Falls

Table 2 Continued. Amphibian and incidental reptile locality records documented during the 1997 Snake River Resource Area northern leopard frog survey. Chronological.

ITEM/MAP	SPECIES/NO.	DATE MMDDYY	TIME	LOCATION	LOCALITY	COUNTY
18 (MAP 7)	Boreal Chorus Frog (2+ calling)	05/26/97	1800	T09S R23E Sec 12 NE¼ of SW¼ of NE¼	King Spill Irrigation ditch, east end	Minidoka
19 (MAP 7)	Boreal Chorus Frog (1 adult)	05/26/97	1950	T09S R24E Sec 6 SE¼ of SE¼ of SE¼	Camp Holly marsh; east ditch	Minidoka
20 (MAP 8)	Pacific Chorus Frog (2 adults)	05/27/97	1440	T12S R19E Sec 28 SW¼ of SW¼ of NE¼	Deadeye Reservoir	Cassia
21 (MAP 9)	Wandering Garter Snake (2)	05/28/97	1400	T15S R22E Sec 25 SE¼ of SW¼ of SW¼	Upper North Fork of Cold Creek	Cassia
22 (MAP 10)	Boreal Chorus Frog (several calling)	06/01/97	1815	T10S R24E Sec 22 NE¼ of NW¼	Peterson's (Frenchman's) Island in Snake R.	Cassia
23 (MAP 11)	Northern Leopard Frog (2 adult)	06/03/97	1045	T09S R27E Sec 17 NW¼ of SW¼	S. Shore Lake Walcott	Cassia
24 (MAP 11)	Northern Leopard Frog (3 adult)	06/03/97	1300	T09S R27E Sec 21 SW¼ of SE¼ of NW¼	S. Shore Snake River	Cassia
25 (MAP 11)	Northern Leopard Frog (4 adult)	06/03/97	1300	T09S R27E Sec 21 SW¼ of SE¼ of NW¼	S. Shore Snake River	Cassia
26 (MAP 13)	Northern Leopard Frog (4 adult)	06/03/97	1500	T09S R27E Sec 22 NW¼ of SW¼ of SE¼	S. Shore Snake River. End of Bobcat Canyon	Cassia
27 (MAP 2)	None seen	06/04/97	1432	T15S R26E Sec 32 SW¼ of SW¼;T16S R26E Sec 5 NWNW¼	Raft River exclosure; s side	Cassia
28 (MAP 7)	Boreal Chorus Frog (chorus)	06/09/97	1900	T09S R24E Sec 6 SE¼ of SE¼ of SE¼	Camp Holly marsh; west side	Minidoka
29 (MAP 14)	None seen	06/24/97	0915	T15S R20E Sec 11	Trapper Creek	Cassia
30 (MAP 15)	Tiger Salamander (1 dead neotenic)	06/24/97	1230	T12S R17E Sec 2 SE¼	North Cottonwood Reservoir; east shore	Twin Falls
31 (MAP 16)	Northern Leopard Frog (2 adults)	06/25/97	1115	T09S R27E Sec 25 NW¼ of SE¼ of NW¼	S. Shore Snake R. 0.9 miles NW of Raft R Mouth	Cassia
32 (MAP 2)	None Seen	06/27/97	1150	T15S R26E Sec 32 SW¼ of SW¼;T16S R26E Sec 5 NWNW¼	Raft River Exclosure	Cassia
33 (MAP 14)	None seen	06/28/97	1745	T15S R20E Sec 11	Trapper Creek	Cassia

Table 2 Continued. Amphibian and incidental reptile locality records documented during the 1997 Snake River Resource Area northern leopard frog survey. Chronological.

ITEM/MAP	SPECIES/NO.	DATE	TIME	LOCATION	LOCALITY	COUNTY
34 (MAP 4)	Northern Leopard Frog (3 adults)	07/02/97	1200	T09S R28E Sec 15 SE¼ of SW¼ of NW¼	0.6 miles E of Gifford Springs	Power
35 (MAP 11)	N. Leopard Frog (1 adult)	07/02/97	1350	T09S R27E Sec 9 SW¼ of SW¼ of NW¼	Pond near E side Lake Walcott	Blaine
36 (MAP 12)	N. Leopard Frog (1 adult)	07/02/97	1500	T08S R27E Sec 32 SW¼ of SW¼ of SW¼	Bay on NE shore Lake Walcott	Blaine
37 (MAP 17)	N. Leopard Frog (3 adults)	07/02/97	1600	T08S R26E Sec 26 SE¼ of NE¼ of SW¼; and SW¼ of NE¼ of SW¼	N. shore Lake Walcott "Six Mile Hole"	Blaine
38 (MAP 17)	N. Leopard Frog (4 adults)	07/02/97	1700	T08S R26E Sec 33 NE¼ of NE¼	N Side Lake Walcott at "Blue Lake"	Blaine
39 (MAP 18)	One 1-inch black tadpole. Possible Western Toad	07/24/97	1030	T09S R20E Sec 29 SE¼ of NW¼ of SE¼	S side Wilson Reservoir	Jerome
40 (MAP 19)	Northern Leopard Frog (11 adults)	08/22/97	0955	T12S R34E Sec 25 NW¼ of NW¼ of SW¼	Bay on east side Daniels Reservoir	Oneida
41 (MAP 19)	Northern Leopard Frog (15 adults)	08/22/97	1055	T12S R34E Sec 25 SW¼ of NW¼ of NW¼	Bay on east side Daniels Reservoir	Oneida
42 (MAP 20)	Northern Leopard Frog (3 ca. 1.6 inches)	08/22/97	1400	T10S R35E Sec 35 SW¼ of SW¼ of NE¼ and SE¼ of SE¼ of NW¼	South shore Hawkins Reservoir	Bannock
43 (MAP 20)	Northern Leopard Frog (18 small; ca. 1-1.5 inches)	08/22/97	1445	T10S R35E Sec 35 SW¼ of NE¼ of NW¼	Backwaters of Hawkins Reservoir	Bannock
44 (MAP 2)	None seen	09/02/97	1437	T15S R26E Sec 32 SW¼ of NW¼; T16S R26E Sec 5 NW¼ of NW¼	Raft River exclosure	Cassia

Table 3. General site characteristics. Amphibian and incidental reptile locality records documented during the 1997 Snake River Resource Area northern leopard frog survey.

ITEM	SPECIES/NO.	DATE MMDDYY	HABITAT	ELEVATION (feet)	LAND STATUS
1	Great Basin Spadefoot (6 egg masses)	04/22/97	Man-made spring fed pond; "rushes"	4830	BLM
2	None seen	04/22/97	Wetland adjacent to stream; Typha; "rushes"	4960	BLM
3	Boreal chorus frog (chorus)	04/27/97	Wetland adjacent to Canal. Typha	4170	Private
4	None seen	04/30/97	Wetland adjacent to stream; Typha; "rushes"	4960	BLM
5	Great Basin Skink (juvenile)	05/02/97	Under weathered board	4220	BLM
6	None seen	05/02/97	Marsh and Alkali pond	4200	BLM
7	Pacific Chorus Frog (13 adult)	05/10/97	2 small man-made spring fed ponds; "rushes"	5580	BLM
8	None Seen	05/10/97	Small man-made spring-fed pond "rushes"	5740	BLM
9	Northern Leopard Frog (1 adult)	05/10/97	Resprouting bulrushes <1 ft (burned ca fall 1996)	4125	Private
10	Boreal Chorus Frogs (chorus)	05/10/97	Resprouting Typha, Bulrushes(burned ca fall 1996)	4125	Private
11	Boreal Chorus Frog (2 adults)	05/11/97	Typha marsh; irrigation wastewater	4140	Bureau of Reclamation
12	None seen	05/20/97	Wetland adjacent to stream; Typha; "rushes"	4960	BLM
13	Great Basin Spadefoot tadpoles	05/20/97	Man-made spring fed pond; "rushes"	4830	BLM
14	Northern Leopard Frog (2 adult plus numerous tadpoles)	05/21/97	Resprouting Typha, Bulrushes(burned ca. fall 1996)	4125	Private
15	Boreal Chorus Frog (1 adult captured/released)	05/21/97	Shore of lake; bulrushes, typha	4125	Private

Table 3 Continued. General site characteristics. Amphibian and incidental reptile locality records documented during the 1997 Snake River Resource Area northern leopard frog survey.

ITEM	SPECIES/NO.	DATE MMDDYY	HABITAT	ELEVATION (feet)	LAND STATUS
16	Western Skink (1 adult)	05/22/97	Under flat rock; big sage; AGCR	5760	BLM
17	Pacific Chorus Frog (1 adult)	05/22/97	Spring; watercress; "rushes"	5620	BLM
18	Boreal Chorus Frog (2+ calling)	05/26/97	Irrigation ditch; Typha; "rushes"	4150	Bureau of Reclamation
19	Boreal Chorus Frog (1 adult)	05/26/97	Typha marsh; irrigation wastewater	4140	Bureau of Reclamation
20	Pacific Chorus Frog (2 adults)	05/27/97	Man-made pond; "rushes"	5620	BLM
21	Wandering Garter Snake (2)	05/28/97	Inactive beaver dam	7200	BLM
22	Boreal Chorus Frog (several calling)	06/01/97	Shallow pond; "rushes"	4150	Bureau of Reclamation
23	Northern Leopard Frog (2 adult)	06/03/97	Typha, bulrushes on shore of bay	4200	USFWS Minidoka NWR
24	Northern Leopard Frog (3 adult)	06/03/97	Typha, bulrushes on shore of bay	4200	USFWS Minidoka NWR
25	Northern Leopard Frog (4 adult)	06/03/97	Typha, bulrushes; shore of narrow bay	4200	USFWS Minidoka NWR
26	Northern Leopard Frog (4 adult)	06/03/97	Open muddy shore of bay; sparse bulrushes	4200	USFWS Minidoka NWR
27	None seen	06/04/97	Typha, bulrush, "rushes"	4960	BLM
28	Boreal Chorus Frog (chorus)	06/09/97	Typha, bulrush marsh	4140	Bureau of Reclamation
29	None seen	06/24/97	Sedges, grass, "rushes", thistle	5280	USFS
30	Tiger Salamander (1 dead neotenic)	06/24/97	Shore of man-made reservoir; floating in water near shore	4250	BLM/Private

Table 3 Continued. General site characteristics. Amphibian and incidental reptile locality records documented during the 1997 Snake River Resource Area northern leopard frog survey.

ITEM	SPECIES/NO.	DATE MMDDYY	HABITAT	ELEVATION (feet)	LAND STATUS
31	Northern Leopard Frog (2 adults)	06/25/97	Floating mat of dead bulrushes	4200	USFWS Minidoka NWR
32	None seen	06/27/97	Typha, "rushes"	4960	BLM
33	None seen	06/28/97	Sedges, "Rushes", grass, thistle	5280	USFS
34	Northern Leopard Frog (3 adults)	07/02/97	"rushes"/ spike rushes	4200	BLM
35	Northern Leopard Frog (1 adult)	07/02/97	Sedges; "rushes"	4200	BLM/USFWS Minidoka NWR boundary
36	Northern Leopard Frog (1 adult)	07/02/97	Edge of bay; sedges, "rushes"	4200	BLM/USFWS Minidoka NWR boundary
37	Northern Leopard Frog (3 adults)	07/02/97	Bay shore with grass, "rushes", bulrushes	4200	USFWS Minidoka NWR
38	Northern Leopard Frog (4 adults)	07/02/97	Small lake; "rushes", Typha, grass edge	4200	USFWS Minidoka NWR
39	One 1-inch black tadpole. Possible Western Toad	07/24/97	Lake shore; shallow flooded zone; bulrushes; Typha	4015	BLM
40	Northern Leopard Frog (11 adults)	08/22/97	Bay of Reservoir; "rushes"	5160	Private
41	Northern Leopard Frog (15 adults)	08/22/97	Bay of Reservoir; "rushes"	5160	Private
42	Northern Leopard Frog (3 ca. 1.6 inches)	08/22/97	Edge of Reservoir; "rushes"	5140	BLM
43	Northern Leopard Frog (18 small; ca. 1-1.5 inches)	08/22/97	Edge of Reservoir; Potentilla, "rushes", cocklebur	5140	Private
44	None seen	09/02/97	"rushes"; Typha	4960	BLM

Table 4. National Wetland Inventory Classification for sites surveyed during the 1997 Snake River Resource Area northern leopard frog survey.

ITEM	SPECIES/NO.	LOCALITY	NWI CLASSIFICATION
1	Great Basin Spadefoot (6 egg masses)	McClenden Springs lower pond	PUBFx
2	None seen	Raft River exclosure	PEMC
3	Boreal chorus frog (chorus)	Main Northside Canal	PUSCx
4	None seen	Raft River exclosure	PEMC
5	Great Basin Skink (juvenile)	0.6 mile E of Gifford Sprgs	Not Applicable
6	None seen	"Alkali Pond" & marsh	Alkali Pond: PUSC and PEMA Marsh: PEMC and PUBH
7	Pacific Chorus Frog (13 adult)	Ponds 0.7 miles SSW of Rock Cabin Sprgs	2 Man-made ponds associated with PEMC
8	None Seen	Rock Cabin Springs lower pond	Man-made pond associated with PEMC
9	Northern Leopard Frog (1 adult)	Marsh at west end Murtaugh Lake	PEMCh
10	Boreal Chorus Frogs (chorus)	West end Murtaugh Lake	PEMCh
11	Boreal Chorus Frog (2 adults)	Camp Holly Marsh	PEMC
12	None seen	Raft River exclosure	R3UBH; PEMC; R3USC
13	Great Basin Spadefoot tadpoles	McClenden Springs lower pond	PUBFx
14	Northern Leopard Frog (2)	Marsh at west end Murtaugh Lake	PEMCh
15	Boreal Chorus Frog (1 adult)	West end Murtaugh Lake	PEMCh
16	Western Skink (1 adult)	0.5 miles NNE of Rock Cabin Spring	Not Applicable
17	Pacific Chorus Frog (1 adult)	BLM spring No. 4702480054	PEMB

Table 4 Continued. National Wetland Inventory Classification for sites surveyed during the 1997 Snake River Resource Area northern leopard frog survey.

ITEM	SPECIES/NO.	LOCALITY	NWI CLASSIFICATION
18	Boreal Chorus Frog (2+ calling)	King Spill irrigation ditch, east end	PEMC
19	Boreal Chorus Frog (1 adult)	Camp Holly marsh; east ditch	PEMC
20	Pacific Chorus Frog (2 adults)	Deadeye Reservoir	PEMA and PUSCx
21	Wandering Garter Snake (2)	Upper North Fork of Cold Creek	Not classified. Inactive beaver dam associated with R4SBC
22	Boreal Chorus Frog (several calling)	Peterson's (Frenchman's) Island in Snake R.	PEMAh
23	Northern Leopard Frog (2 adult)	S. Shore Lake Walcott	PEMCh
24	Northern Leopard Frog (3 adult)	S. Shore Snake River	PEMCh
25	Northern Leopard Frog (4 adult)	S. Shore Snake River	PEMCh
26	Northern Leopard Frog (4 adult)	S. Shore Snake River. End of Bobcat Canyon	PEMCh
27	None seen	Raft River exclosure; s side	R3UBH; PEMC; R3USC
28	Boreal Chorus Frog (chorus)	Camp Holly marsh; west side	PEMC
29	None seen	Trapper Creek	PEMC
30	Tiger Salamander (1 dead neotenic)	North Cottonwood Reservoir; east shore	PEMCh
31	Northern Leopard Frog (2 adults)	S. Shore Snake R. 0.9 miles NW of Raft River Mouth	PEMCh
32	None seen	Raft River exclosure	R3UBH; PEMC; R3USC

Table 4 Continued. National Wetland Inventory Classification for sites surveyed during the 1997 Snake River Resource Area northern leopard frog survey.

ITEM	SPECIES/NO.	LOCALITY	NWI CLASSIFICATION
33	None seen	Trapper Creek	PEMC
34	Northern Leopard Frog (3 adults)	0.6 miles E of Gifford Springs	Marsh only: PEMC and PUBH
35	Northern Leopard Frog (1 adult)	Pond near E side Lake Walcott	PUBHh
36	Northern Leopard Frog (1 adult)	Bay on NE shore Lake Walcott	L2USCh
37	Northern Leopard Frog (3 adults)	N. shore Lake Walcott "Six Mile Hole"	Not Classified
38	Northern Leopard Frog (4 adults)	N Side Lake Walcott at "Blue Lake"	PUBH
39	One 1-inch black tadpole. Possible Western Toad	S side Wilson Reservoir	PSSCh
40	Northern Leopard Frog (11 adults)	Bay on east side Daniels Reservoir	L2USCh
41	Northern Leopard Frog (15 adults)	Bay on east side Daniels Reservoir	L2USCh
42	Northern Leopard Frog (3 ca. 1.6 inches)	South shore Hawkins Reservoir	Not Classified
43	Northern Leopard Frog (18 small; ca. 1-1.5 inches)	Backwaters of Hawkins Reservoir	Not Classified
44	None seen	Raft River exclosure	R3UBH; PEMC; R3USC

Legend to NWI classification codes used in Table 4.

System/Subsystem
P= Palustrine
L= Lacustrine
  1= Limnetic
  2= Littoral
R= Riverine
  3= Upper Perennial
  4= Intermittent

Class
EM= Emergent
UB= Unconsolidated Bottom
US= Unconsolidated Shore
SB= Streambed
SS= Scrub-Shrub
OW= Open Water

Modifiers
A= Temporarily Flooded
B= Saturated
C= Seasonally Flooded
F= Semipermanently Flooded
H= Permanently Flooded

Special Modifiers
h= Diked/Impounded
x= Excavated

Table 5. Microsite and weather characteristics. Amphibian and incidental reptile locality records documented during the 1997 Snake River Resource Area northern leopard frog survey.

ITEM	SPECIES/ NO.	DATE MMDDYY	AIRTEMP deg F	% CLOUD COVER	WIND mph	WATER TEMP deg F	WATER pH	DISSOLVED SOLIDS mg/L
1	Great Basin Spadefoot (6 egg masses)	04/22/97	57	partly	4-7	59	8.3	207-242
2	None seen	04/22/97	55	100	12-15	52	8.0	750-875
3	Boreal chorus frog (chorus)	04/27/97	65	100	10-12	N/A	N/A	N/A
4	None seen	04/30/97	53	100	Lt	46	N/A	N/A
5	Great Basin Skink (juv)	05/02/97	53	0	4-7	N/A	N/A	N/A
6	None seen a=alkali pond b=marsh	05/02/97	a)53 b)49	partly	12	a)N/A b)51	a)9.9 b)9.1	a)4500-5250 b)1380-1610
7	Pacific chor Frog (13 adlt) a=S pond b=N pond	05/10/97	74	0	light to 15	a)75 b)66	a)8.4 b)8.2	a)93-109 b)60-70 Note: 10 of 13 frogs in South pond (a)
8	None Seen	05/10/97	77	0	Var	63	8.4	54-63
9	Northern Leopard Frog (1 adult)	05/10/97	66	0	Light	N/A	N/A	N/A
10	Boreal Chorus Frogs (chorus)	05/10/97	66	0	Light	N/A	N/A	N/A
11	Boreal Chorus Frog (2 adults)	05/11/97	73	0	Light	68	8.9	180-210
12	None seen	05/20/97	78	90	Light	59	8.8	258-301
13	Great Basin Spadefoot tadpoles	05/20/97	69	100	Light	64	N/A	N/A
14	Northern Leopard Frog ;2 adults; numerous tadpoles	05/21/97	74	10	0	79	8.4	198-231

Table 5 Continued. Microsite and weather characteristics. Amphibian and incidental reptile locality records documented during the 1997 Snake River Resource Area northern leopard frog survey.

ITEM	SPECIES	DATE MMDDYY	AIR TEMP deg F	% CLOUD COVER	WIND mph	WATER TEMP deg F	WATER pH	DISSOLVED SOLIDS mg/L
15	Boreal Chorus Frog (1 adult captured/ released)	05/21/97	74	75+	N/A	N/A	N/A	N/A
16	Western Skink (1 adult)	05/22/97	70	100	Light	N/A	N/A	N/A
17	Pacific Chorus Frog (1 adult)	05/22/97	74	High overcast	Light	56	7.9	60-70
18	Boreal Chorus Frog (2+ calling)	05/26/97	64	0	Light	62	8.9	162-189
19	Boreal Chorus Frog (1 adult)	05/26/97	64	0	Mod	63	N/A	N/A
20	Pacific Chorus Frog (2 adults)	05/27/97	71	High overcast	Light	65	8.1	72-84
21	Wandering Garter Snake (2 juvenile)	05/28/97	75	100	Light	54	8.1	138-161
22	Boreal Chorus Frog (several calling)	06/01/97	74	100	Light	74	8.7	1140-1330
23	Northern Leopard Frog (2 adult)	06/03/97	79	25	8-10	69	9.1	156-182
24	Northern Leopard Frog (3 adult)	06/03/97	84	70	>12	68	9.1	153-178
25	Northern Leopard Frog (4 adult)	06/03/97	84	70	>12	68	9.1	153-178
26	Northern Leopard Frog (4 adult)	06/03/97	86	40	>12	76	9.1	156-182

Table 5 Continued. Microsite and weather characteristics. Amphibian and incidental reptile locality records documented during the 1997 Snake River Resource Area northern leopard frog survey.

ITEM	SPECIES	DATE MMDDYY	AIR TEMP deg F	% CLOUD COVER	WIND mph	WATER TEMP deg F	WATER pH	DISSOLVED SOLIDS mg/L
27	None seen	06/04/97	72	60	Mod	68	N/A	N/A
28	Boreal Chorus Frog	06/09/97	72	80	0	70	9.0	258-301
29	None seen	06/24/97	61	0	0	52	N/A	N/A
30	Tiger Salaman-der (1 dead neotenic)	06/24/97	71	0	Light	72	9.8	138-161
31	Northern Leopard Frog (2 adults)	06/25/97	69	0	Light	62	8.4	141-164
32	None seen	06/27/97	70	75	Light	74	7.7	N/A
33	None seen	06/28/97	75	0	Light	64	N/A	N/A
34	Northern Leopard Frog (3 adults)	07/02/97	72	60	Light	63	7.9	1620-1890
35	Northern Leopard Frog (1 adult)	07/02/97	72	100	Strong	a)62 b)69	a)7.5 b)9.5	a)N/A b)276-322 Note:a=frog site; b=pond
36	N Leopard Frog (1 adult)	07/02/97	68	100	Strong	68	9.4	126-147
37	Northern Leopard Frog (3 adults)	07/02/97	74	40	Strong	68	8.9	141-164
38	Northern Leopard Frog (4 adults)	07/02/97	78	40	Mod	68	9.5	246-287

Table 5 Continued. Microsite and weather characteristics. Amphibian and incidental reptile locality records documented during the 1997 Snake River Resource Area northern leopard frog survey.

ITEM	SPECIES/ NO.	DATE MMDDYY	AIR TEMP deg F	% CLOUD COVER	WIND mph	WATER TEMP deg F	WATER pH	DISSOLVED SOLIDS mg/L
39	One 1-inch black tadpole. Possible Western Toad	07/24/97	72	100	0	72	8.9	138-161
40	Northern Leopard Frog (11 adults)	08/22/97	74	0	0	71	8.6	228-266
41	Northern Leopard Frog (15 adults)	08/22/97	77	0	Light	74	8.5	228-266
42	Northern Leopard Frog (3 ca. 1.6 inches)	08/22/97	86	0	Light	72	8.7	330-385
43	Northern Leopard Frog (18 small; ca. 1-1.5 inches)	08/22/97	86	0	0	N/A	N/A	N/A
44	None seen	09/02/97	70	100	0	68	8.5	660-770

Table 6. Survey effort and photo voucher record for amphibians and reptiles noted during Visual Encounter Surveys. 1997 Snake River Resource Area northern leopard frog survey.

ITEM/HERP RECORD	SPECIES/NO	DATE MMDDYY	TOTAL MAN-MINUTES EFFORT	AREA SEARCHED	PHOTO VOUCHER?
(1) 97-001	Great Basin Spadefoot (6 egg masses)	04/22/97	66	Entire pond edge ca.300 ft	Yes
(2) N/A	None seen	04/22/97	90	Typha wetland N. side of River	N/A
(3) 97-002	Boreal chorus frog (chorus)	04/27/97	N/A. Incidental	N/A. Heard chorus	N/A
(4) N/A	None seen	04/30/97	30	ca. 800 ft of wetland edge	N/A
(5) 97-003	Great Basin Skink (juvenile)	05/02/97	N/A. Incidental	N/A	Yes
(6) N/A a=alkali pond b=marsh	None seen	05/02/97	a)50 b)60	a)Pond edge b)Marsh	N/A
(7) 97-004	Pacific Chorus Frog (13 adult)	05/10/97	90	Margins of 2 ponds	Yes
(8) N/A	None Seen	05/10/97	20	Lower pond	N/A
(9) 97-005	Northern Leopard Frog (1 adult)	05/10/97	ca. 10	Haphazard; in shallows of marsh	Yes
(10)97-006	Boreal Chorus Frogs (chorus)	05/10/97	N/A/ Incidental	N/A. Heard chorus	No
(11)97-007	Boreal Chorus Frog (2 adults)	05/11/97	45	ca 100 ft of Typha edge	No
(12) N/A	None seen	05/20/97	a. 15 b. 20	a. S side Raft River ca. 1400 ft b.800 ft Typha edge	N/A
(13) N/A	Great Basin Spadefoot tadpoles	05/20/97	40	Pond margin/shallows ca 300 ft	No
(14)97-008	Northern Leopard Frog (2 adult plus numerous tadpoles)	05/21/97	246	Edge of bulrush/ Typha ca. 1000 ft	Yes (tadpole)
(15)97-009	Boreal Chorus Frog (1 adult captured/released)	05/21/97	246	Edge of bulrush/ Typha ca. 1000 ft	No

Table 6 Continued. Survey effort and photo voucher record for amphibians and reptiles noted during Visual Encounter Surveys. 1997 Snake River Resource Area northern leopard frog survey.

ITEM/HERP RECORD	SPECIES/NO	DATE MMDDYY	TOTAL MAN-MINUTES EFFORT	AREA SEARCHED	PHOTO VOUCHER?
(16) 97-010	Western Skink (1 adult)	05/22/97	N/A Incidental	N/A Incidental	No
(17) 97-011	Pacific Chorus Frog (1 adult)	05/22/97	Not recorded	Spring	Yes
(18) 97-012	Boreal Chorus Frog (2+ calling)	05/26/97	Not recorded	Irrigation ditch ca. 100 ft	No
(19) 97-013	Boreal Chorus Frog (1 adult)	05/26/97	Not recorded	Irrigation ditch ca 100 ft	Yes
(20) 97-014	Pacific Chorus Frog (2 adults)	05/27/97	ca. 25	Pond edge ca. 311 ft	Yes
(21) 97-015	Wandering Garter Snake (2)	05/28/97	N/A Incidental	Edge of beaver pond 60x40 ft	No
(22) 97-016	Boreal Chorus Frog (several calling)	06/01/97	20	ca. 150 ft of pond edge	No
(23) 97-017	Northern Leopard Frog (2 adult)	06/03/97	125	ca. 1500 ft of shore	No
(24) 97-018	Northern Leopard Frog (3 adult)	06/03/97	90	ca. 700 ft of shore	Yes
(25) 97-019	Northern Leopard Frog (4 adult)	06/03/97	90	ca. 700 ft of shore	No
(26) 97-020	Northern Leopard Frog (4 adult)	06/03/97	80	ca.2200 ft of shore	No
(27) N/A	None seen	06/04/97	140	S side River ca. 0.5 mile	N/A
(28) 97-021	Boreal Chorus Frog (chorus)	06/09/97	165	8400 ft of grid-lines	N/A
(29) N/A	None seen	06/24/97	35	ca. 2000 ft	N/A
(30) 97-022	Tiger Salamander (1 dead neotenic)	06/24/97	60	ca. 1000 ft of shoreline and ditch	Yes
(31) 97-023	Northern Leopard Frog (2 adults)	06/25/97	224	3200 ft shore edge	Yes
(32) N/A	None seen	06/27/97	61	3600 ft of stream and marsh edge	N/A

Table 6 Continued. Survey effort and photo voucher record for amphibians and reptiles noted during Visual Encounter Surveys. 1997 Snake River Resource Area northern leopard frog survey.

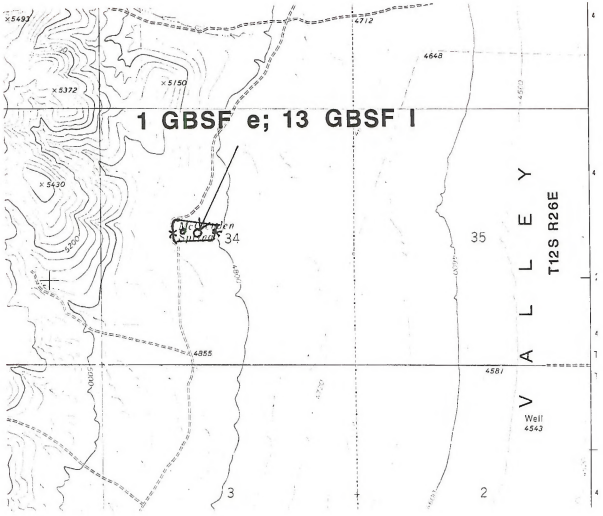
ITEM/HERP RECORD	SPECIES/NO	DATE MMDDYY	TOTAL MAN-MINUTES EFFORT	AREA SEARCHED	PHOTO VOUCHER?
(33) N/A	None seen	06/28/97	80	ca. 2000 ft of Stream edge	N/A
(34) 97-024	Northern Leopard Frog (3 adults)	07/02/97	150	ca. 1-2 ac wetland E of fence plus ca. 600 ft shore W of fence	No
(35) 97-025	Northern Leopard Frog (1 adult)	07/02/97	60	Pond perimeter ca. 845 ft and adjacent wetlands	No
(36) 97-026	Northern Leopard Frog (1 adult)	07/02/97	40	Edge of bay N of Rock Wall	No
(37) 97-027	Northern Leopard Frog (3 adults)	07/02/97	60	N end of bay; ca. 1000 ft shore	Yes
(38) 97-028	Northern Leopard Frog (4 adults)	07/02/97	40	Edge of lake N of cross fence	No
(39) N/A	One 1-inch black tadpole. Possible Western Toad.	07/24/97	45	ca. 1000 ft shore	N/A
(40) 97-029	Northern Leopard Frog (11 adults)	08/22/97	30	ca 300 ft x 30 ft near shoreline	Yes
(41) 97-030	Northern Leopard Frog (15 adults)	08/22/97	20	ca 300 ft x 30 ft shore/ wetland	Yes
(42) 97-031	Northern Leopard Frog (3 ca. 1.6 inches)	08/22/97	20	1000 ft shoreline	Yes
(43) 97-032	Northern Leopard Frog (18 small; ca. 1-1.5 inches)	08/22/97	30	600 ft shoreline/wet land edge	No
(44) N/A	None seen	09/02/97	165	0.5 mile of Raft River plus 800 ft Typha edge in wetland N of River	N/A

APPENDIX B

MAPS 1-20

Nibbs Creek, Idaho

McClenden Springs Pond Area



Amphibians:
NLF = Northern Leopard Frog
PCF = Pacific Chorus Frog (treefrog)
BCF = Boreal Chorus Frog
GBSF= Great Basin Spadefoot
WT = Western Toad
TS = Tiger Salamander

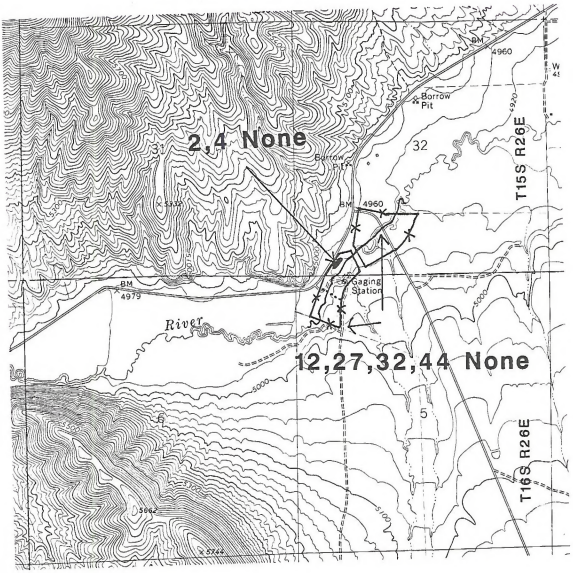
Life stage:
a = adult
c = calling
e = eggs
l = larvae or tadpoles
j = juveniles
n = neotenic

Reptiles:
WGS = Wandering Garter Snake
WS = Western Skink

Map 1. Section of USGS 1:24,000 scale topographic map with Item numbers; species; and life stage observed.

Chokecherry Canyon, Idaho

Raft River Exclosure Area



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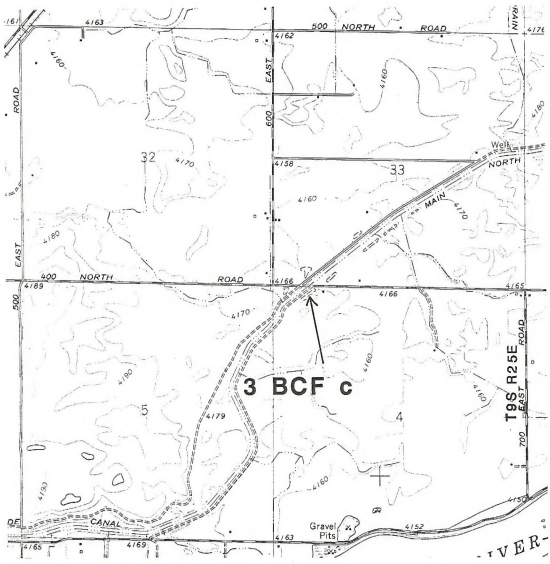
Map 2. Section of USGS 1:24,000 scale topographic map with Item numbers; species; and life stage observed.

Acequia, Idaho

Main Northside Canal Area



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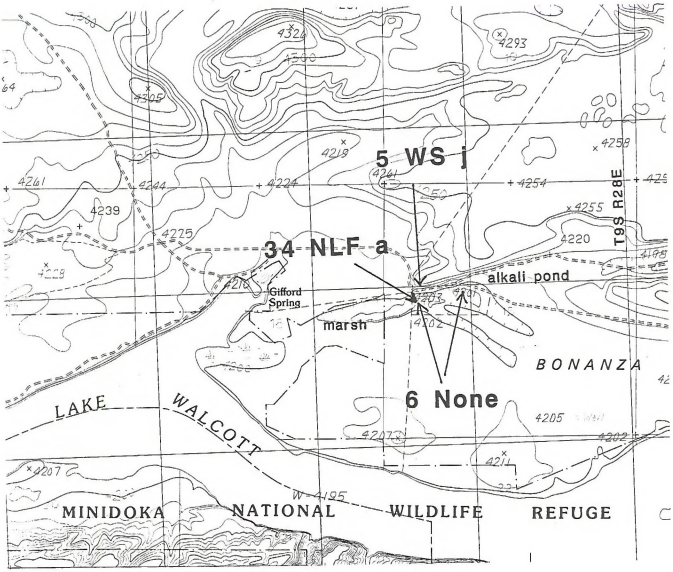
WS = Western Skink

Map 3. Section of USGS 1:24,000 scale topographic map with Item numbers; species; and life stage observed.

Gifford Spring, Idaho

Marsh and Alkali Pond Areas



Amphibians:
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PCF = Pacific Chorus Frog (treefrog)
BCF = Boreal Chorus Frog
GBSF= Great Basin Spadefoot
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TS = Tiger Salamander

Reptiles:
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WS = Western Skink

Life Stage:
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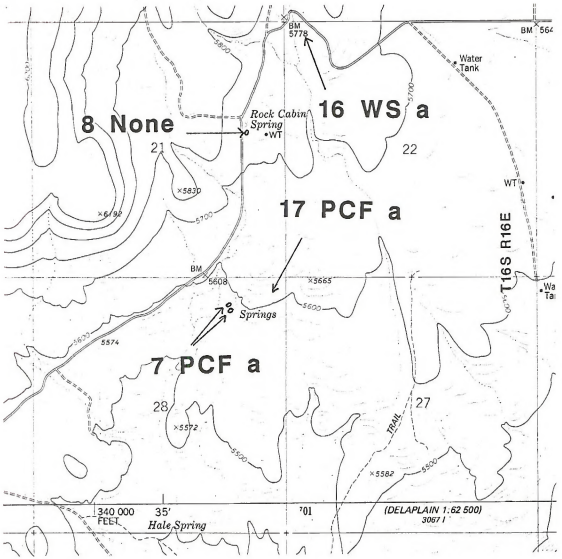
n = neotenic

Map 4. Section of USGS 1:24,000 scale topographic map with Item numbers; species; and life stage observed.

Magic Hot Springs, Idaho

Rock Cabin Spring Area



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BCF = Boreal Chorus Frog
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c = calling
e = eggs
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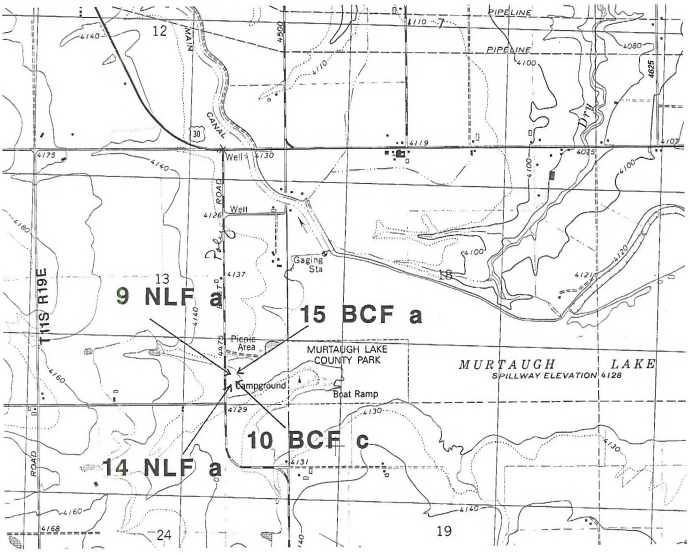
n = neotenic

Map 5. Section of USGS 1:24,000 scale topographic map with Item numbers; species; and life stage observed.

Murtaugh, Idaho

Murtaugh Lake Area



Amphibians:
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PCF = Pacific Chorus Frog (treefrog)
BCF = Boreal Chorus Frog
GBSF= Great Basin Spadefoot
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TS = Tiger Salamander

Life Stage:
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l = larvae or tadpoles
j = juveniles
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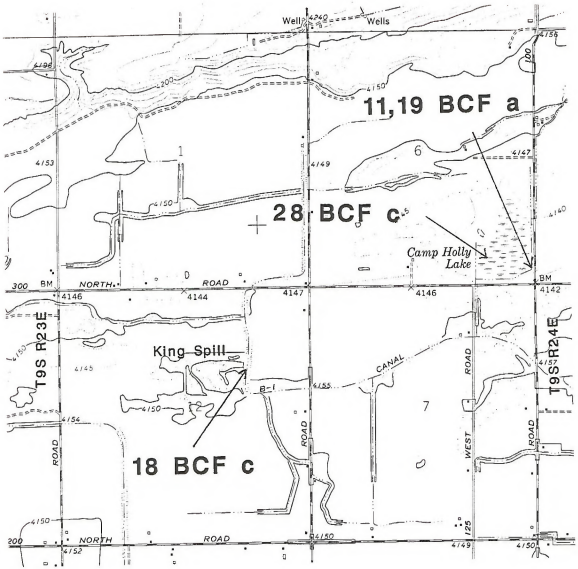
Reptiles:
WGS = Wandering Garter Snake
WS = Western Skink

Map 6. Section of USGS 1:24,000 scale topographic map with Item numbers; species; and life stage observed.

Rupert NW, Idaho

Camp Holly Marsh Area



Amphibians:
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PCF = Pacific Chorus Frog (treefrog)
BCF = Boreal Chorus Frog
GBSF= Great Basin Spadefoot
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TS = Tiger Salamander

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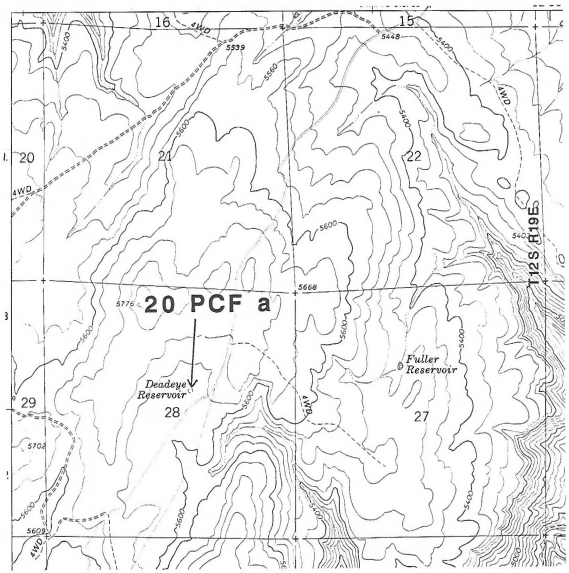
n = neotenic

Reptiles:
WGS = Wandering Garter Snake
WS = Western Skink

Map 7. Section of USGS 1:24,000 scale topographic map with Item numbers; species; and life stage observed.

Rams Horn Ridge, Idaho

Deadeye Reservoir Area



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BCF = Boreal Chorus Frog
GBSF= Great Basin Spadefoot
WT = Western Toad
TS = Tiger Salamander

Life Stage:
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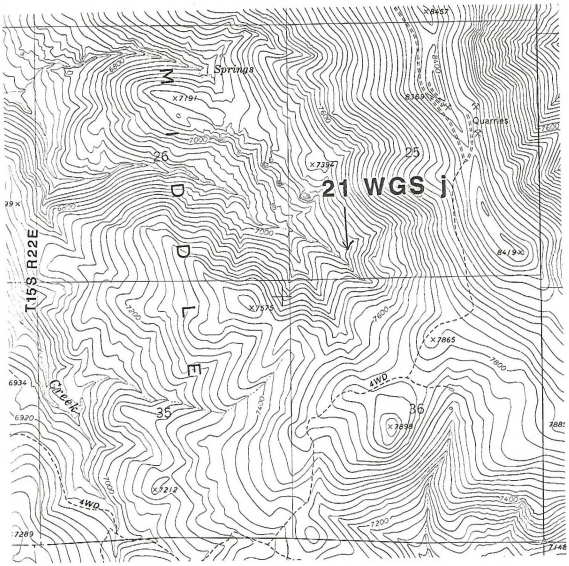
c = calling
e = eggs
l = larvae or tadpoles
j = juveniles
n = neotenic

Reptiles:
WGS = Wandering Garter Snake
WS = Western Skink

Map 8. Section of USGS 1:24,000 scale topographic map with Item numbers; species; and life stage observed.

Lyman Pass, Idaho

Upper North Fork of Cold Creek Area



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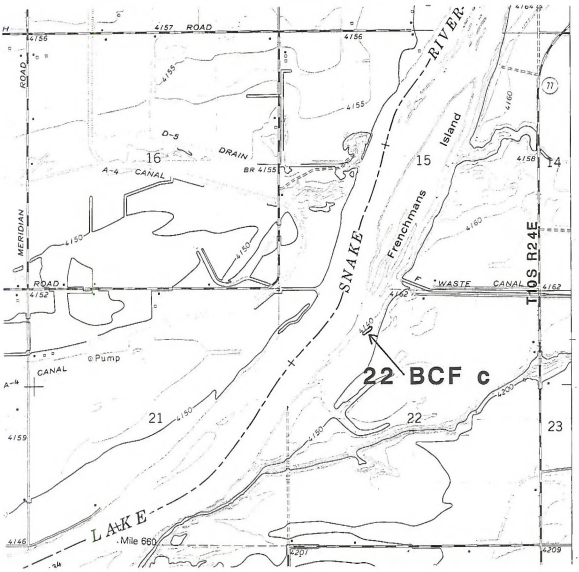
l = larvae or tadpoles
j = juveniles
n = neotenic

Reptiles:
WGS = Wandering Garter Snake
WS = Western Skink

Map 9. Section of USGS 1:24,000 scale topographic map with Item numbers; species; and life stage observed.

Rupert, Idaho

Peterson's (Frenchman's) Island Area



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GBSF= Great Basin Spadefoot
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Life Stage:
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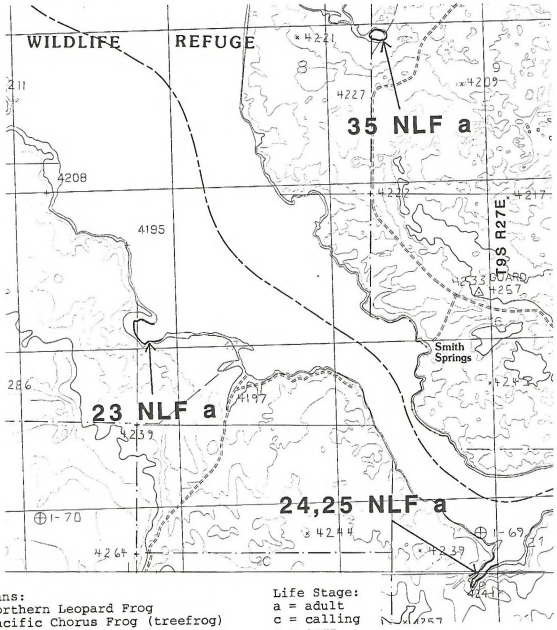
n = neotenic

Reptiles:
WGS = Wandering Garter Snake
WS = Western Skink

Map 10. Section of USGS 1:24,000 scale topographic map with Item numbers; species; and life stage observed.

Lake Walcott East, Idaho

East and South Shore of Lake Walcott Area



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PCF = Pacific Chorus Frog (treefrog)
BCF = Boreal Chorus Frog
GBSF= Great Basin Spadefoot
WT = Western Toad
TS = Tiger Salamander

Life Stage:
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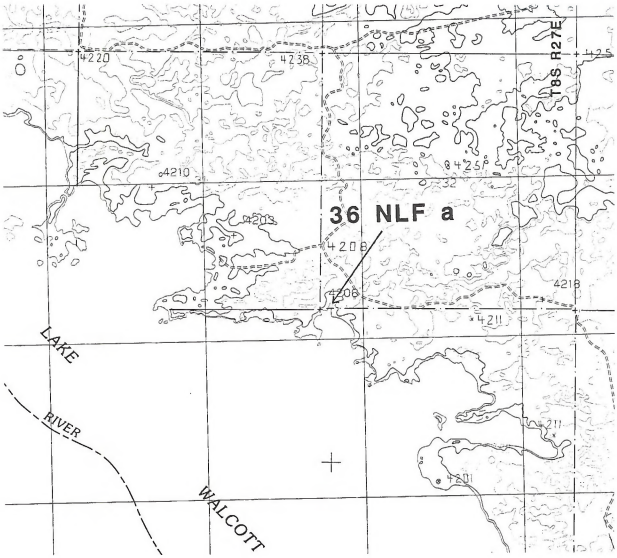
c = calling
e = eggs
l = larvae or tadpoles
j = juveniles
n = neotenic

Reptiles:
WGS = Wandering Garter Snake
WS = Western Skink

Map 11. Section of USGS 1:24,000 scale topographic map with Item numbers; species; and life stage observed.

Lake Walcott East, Idaho

NE Shore of Lake Walcott Area



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GBSF= Great Basin Spadefoot
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Life Stage:
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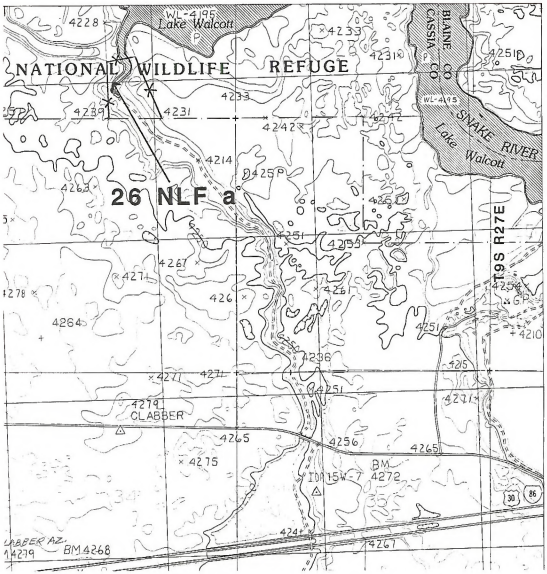
n = neotenic

Reptiles:
WGS = Wandering Garter Snake
WS = Western Skink

Map 12. Section of USGS 1:24,000 scale topographic map with Item numbers; species; and life stage observed.

Lake Walcott SE, Idaho

South Shore Snake River Area



Amphibians:
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GBSF= Great Basin Spadefoot
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TS = Tiger Salamander

Reptiles:
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WS = Western Skink

Life Stage:
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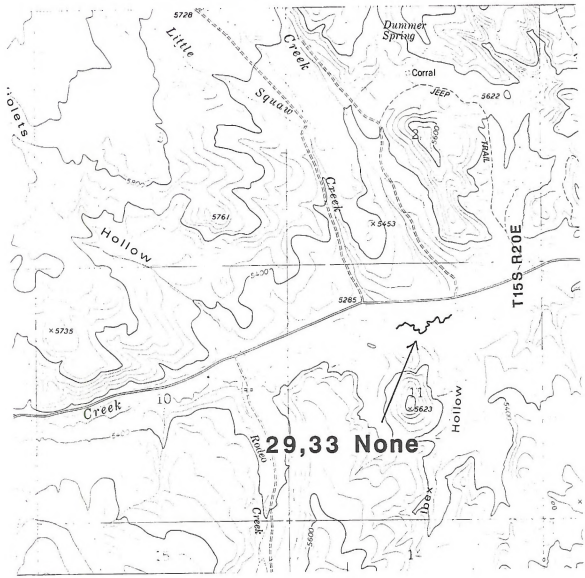
c = calling
e = eggs
l = larvae or tadpoles
j = juveniles
n = neotenic

Map 13. Section of USGS 1:24,000 scale topographic map with Item numbers; species; and life stage observed.

Severe Spring, Idaho

Trapper Creek Area



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PCF = Pacific Chorus Frog (treefrog)
BCF = Boreal Chorus Frog
GBSF= Great Basin Spadefoot
WT = Western Toad
TS = Tiger Salamander

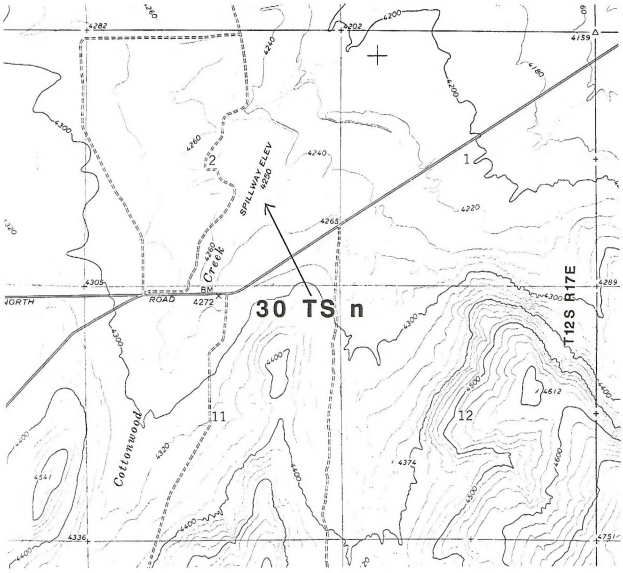
Reptiles:
WGS = Wandering Garter Snake
WS = Western Skink

Life Stage:
a = adult
c = calling
e = eggs
l = larvae or tadpoles
j = juveniles
n = neotenic

Map 14. Section of USGS 1:24,000 scale topographic map with Item numbers; species; and life stage observed.

Hub Butte, Idaho

North Cottonwood Reservoir Area



Amphibians:
NLF = Northern Leopard Frog
PCF = Pacific Chorus Frog (treefrog)
BCF = Boreal Chorus Frog
GBSF= Great Basin Spadefoot
WT = Western Toad
TS = Tiger Salamander

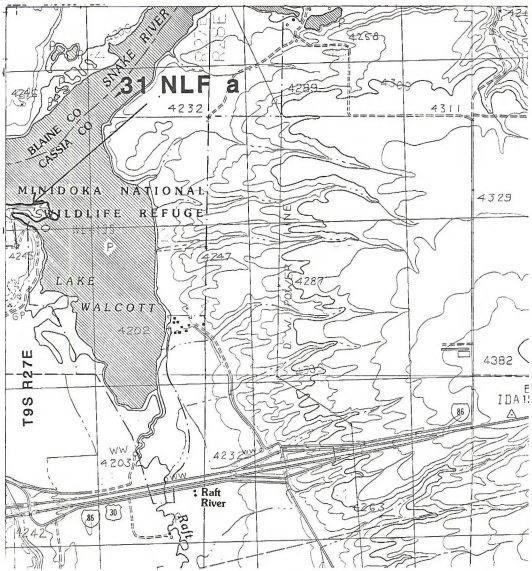
Life Stage:
a = adult
c = calling
e = eggs
l = larvae or tadpoles
j = juveniles
n = neotenic

Reptiles:
WGS = Wandering Garter Snake
WS = Western Skink

Map 15. Section of USGS 1:24,000 scale topographic map with Item numbers; species; and life stage observed.

North Chapin Mountain, Idaho

Raft River Mouth Area



Amphibians:
NLF = Northern Leopard Frog
PCF = Pacific Chorus Frog (treefrog)
BCF = Boreal Chorus Frog
GBSF= Great Basin Spadefoot
WT = Western Toad
TS = Tiger Salamander

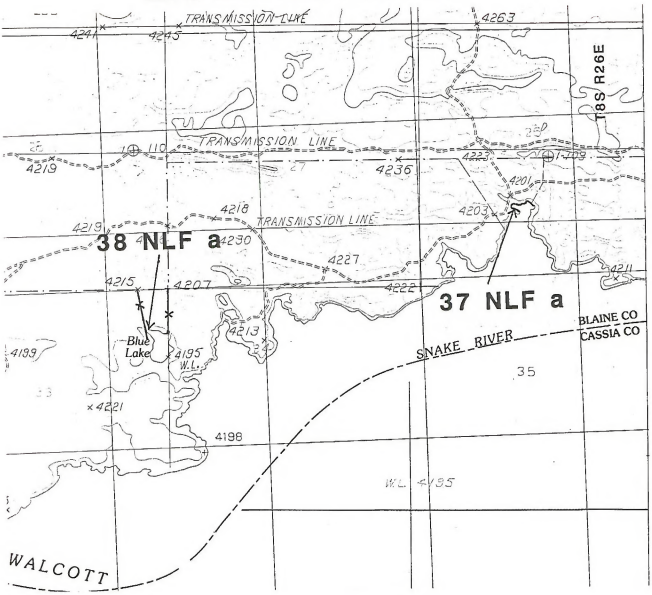
Reptiles:
WGS = Wandering Garter Snake
WS = Western Skink

Life Stage:
a = adult
c = calling
e = eggs
l = larvae or tadpoles
j = juveniles
n = neotenic

Map 16. Section of USGS 1:24,000 scale topographic map with Item numbers; species; and life stage observed.

Lake Walcott West, Idaho

North Shore Lake Walcott Area



Amphibians:
NLF = Northern Leopard Frog
PCF = Pacific Chorus Frog (treefrog)
BCF = Boreal Chorus Frog
GBSF= Great Basin Spadefoot
WT = Western Toad
TS = Tiger Salamander

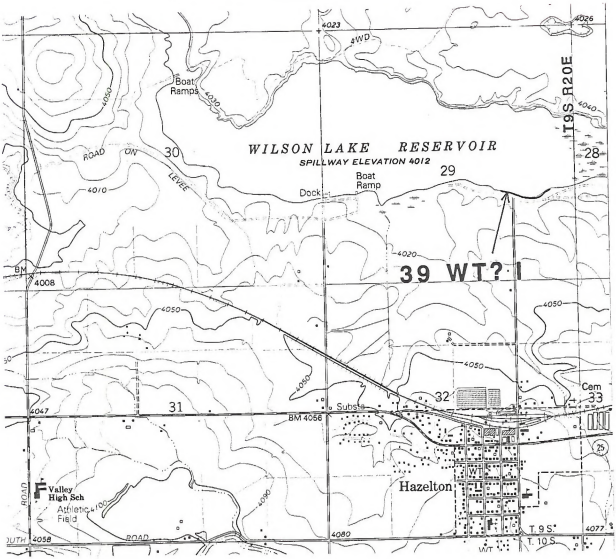
Reptiles:
WGS = Wandering Garter Snake
WS = Western Skink

Life Stage:
a = adult
c = calling
e = eggs
l = larvae or tadpoles
j = juveniles
n = neotenic

Map 17. Section of USGS 1:24,000 scale topographic map with Item numbers; species; and life stage observed.

Eden, Idaho

Wilson Reservoir Area



Amphibians:
NLF = Northern Leopard Frog
PCF = Pacific Chorus Frog (treefrog)
BCF = Boreal Chorus Frog
GBSF= Great Basin Spadefoot
WT = Western Toad
TS = Tiger Salamander

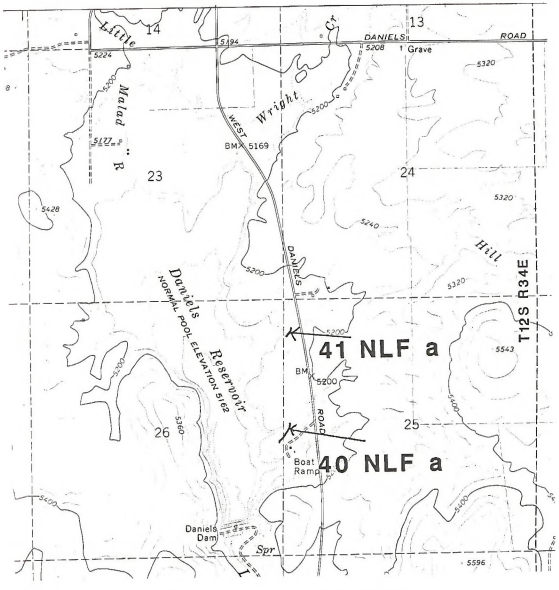
Life Stage:
a = adult
c = calling
e = eggs
l = larvae or tadpoles
j = juveniles
n = neotenic

Reptiles:
WGS = Wandering Garter Snake
WS = Western Skink

Map 18. Section of USGS 1:24,000 scale topographic map with Item numbers; species; and life stage observed.

Daniels, Idaho

Daniels Reservoir Area



Amphibians:
NLF = Northern Leopard Frog
PCF = Pacific Chorus Frog (treefrog)
BCF = Boreal Chorus Frog
GBSF= Great Basin Spadefoot
WT = Western Toad
TS = Tiger Salamander

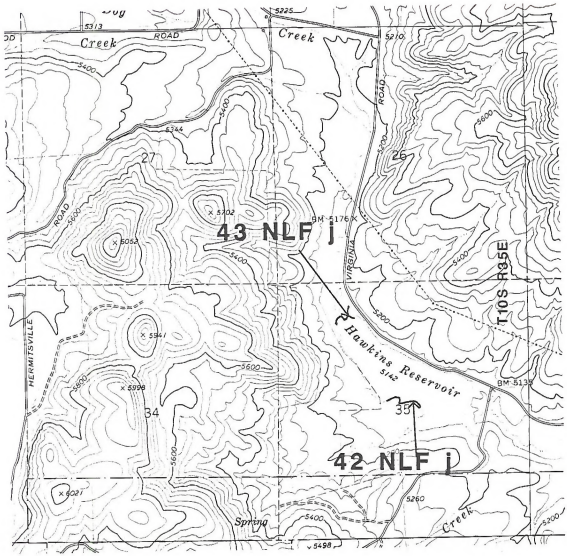
Life Stage:
a = adult
c = calling
e = eggs
l = larvae or tadpoles
j = juveniles
n = neotenic

Reptiles:
WGS = Wandering Garter Snake
WS = Western Skink

Map 19. Section of USGS 1:24,000 scale topographic map with Item numbers; species; and life stage observed.

Hawkins, Idaho

Hawkins Reservoir Area



Amphibians:
NLF = Northern Leopard Frog
PCF = Pacific Chorus Frog (treefrog)
BCF = Boreal Chorus Frog
GBSF= Great Basin Spadefoot
WT = Western Toad
TS = Tiger Salamander

Reptiles:
WGS = Wandering Garter Snake
WS = Western Skink

Life Stage:
a = adult
c = calling
e = eggs
l = larvae or tadpoles
j = juveniles
n = neotenic

Map 20. Section of USGS 1:24,000 scale topographic map with Item numbers; species; and life stage observed.

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1387 S. Vinnell Way
Boise, Idaho 83709

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